

**What Is Claimed Is:**

1. A method of estimating a life of a product, comprising:

determining accelerated stress testing data for the product using the relationship  $t_f = AF \times t_A^2$ , the accelerated stress testing data representing the response of the product operating in a first environment; and

calculating the mean-time-between-failures (MTBF) for the product operating in a second environment based on the accelerated stress testing data.

2. The method of claim 1, wherein said first environment is more likely than the second environment to cause the product to fail.
3. The method of claim 1, wherein the accelerated stress testing data represents the length of time the product operates in the first environment before the product fails.
4. The method of claim 1, wherein the accelerated stress testing data is derived from a plurality of different stress tests.
5. The method of claim 4, wherein the plurality of stress tests includes a temperature test and a vibrational test.
6. The method of claim 1, further comprising calculating upper and lower confidence limits for the MTBF calculation.
7. The method of claim 1, wherein said accelerated stress testing data is determined at least in part from bill of materials (BOM) information on the product.
8. The method of claim 1, wherein said step of calculating is performed during the design of the product.

9. The method of claim 1, wherein said step of calculating is performed prior to manufacturing the product for commercial use.
10. The method of claim 1, wherein said step of calculating is performed using a computer program.
11. The method of claim 1, wherein the accelerated stress testing data includes accelerated stress testing data for a previous design of the product.
12. The method of claim 11, wherein the accelerated stress testing data for the previous design of the product is derived from stress testing in an environment less likely to cause failure than said first environment.
13. The method of claim 11, further comprising calculating a change in MTBF from the previous design of the product.
14. The method of claim 11, wherein said step of calculating includes using the relationship  $\text{EXP} [1/k \sum_{i=1}^k \ln(t_2^2 / t_1^2)]$ ; and wherein  $t_1$  = time to first failure during accelerated stress testing for previous design of the product, and  $t_2$  = time to first failure during accelerated stress testing for the product.
15. The method of claim 11, further comprising calculating a factor increase or decrease in the life of the product as compared to the life of the previous design of the product.
16. The method of claim 11, wherein the accelerated stress testing data is derived from a plurality of different stress tests.
17. The method of claim 16, wherein the different stress tests include a temperature test and a vibrational test.
18. The method of claim 11, wherein said step of calculating is performed during the design of the product.

19. The method of claim 11, wherein said step of calculating is performed prior to manufacturing the product for commercial use.
20. The method of claim 11, wherein said step of calculating is performed using a computer program.
21. A method of estimating a life of a product, comprising:  
determining accelerated stress testing data for the product using the relationship  $t_F = AF \times t_A^2$ , the accelerated stress testing data representing the response of the product operating in a first environment; and  
calculating the mean-time-between-failures (MTBF) for the product operating in a second environment based on the accelerated stress testing data,  
wherein said first environment is more likely than the second environment to cause the product to fail; and  
wherein the accelerated stress testing data is derived from a plurality of different stress tests.
22. A method of estimating a life of a product, comprising:  
determining accelerated stress testing data for the product using the relationship  $t_F = AF \times t_A^2$ , the accelerated stress testing data representing the response of the product operating in a first environment; and  
calculating the mean-time-between-failures (MTBF) for the product operating in a second environment based on the accelerated stress testing data,  
wherein said first environment is more likely than the second environment to cause the product to fail; and  
wherein said accelerated stress testing data is determined at least in part from bill of materials (BOM) information on the product.